

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 - 36. (cancelled)

37. (currently amended) A tube resistant to stress-cracking and forming a water barrier comprising a flexible skirt elongate in an axial direction and a head comprising at least one evacuation orifice and a neck forming a radial extension of the at least one evacuation orifice and being joined to the skirt along the axial direction, at least the skirt and the neck forming a single-piece assembly, a wall of the tube consisting of a mixture of a number "n", where n is at least equal to 1 of polymers belong to the family of copolymers-olefins prepared from C₂ to C₁₀ monomers, the wall at a mid-distance of its length along the axial direction from an end of the skirt distant from the head as far as an end of the neck forming the at least one evacuation orifice and having a wall thickness of between 0.30 and 1.00 mm, at least one polymer of the mixture belongs to the polypropylene family, the constituent mixture of the tube wall having a flexural modulus of between 700 MPa and 80 MPa, according to standard NF EN ISO 178, and each polymer having a flexural modulus defined according to standard NF EN ISO 178 and being conventionally assigned a rank "i" which, in a classification of the "n" polymers of the mixture in decreasing order of their respective flexural modulus values μ_i , places the polymer between a first polymer (i=1) of maximum rigidity and a last polymer (i=n) of minimum rigidity, and each polymer being contained in the mixture in a weight percentage x_i with respect to the total weight of the mixture, the mixture has a dispersion

factor (Kd) of the flexural modulus values of no more than 3 or 2.2 according to whether or not it contains a polyethylene, ~~preferably no more than 2 in both these cases, and further preferably no more than 1.5,~~ this dispersion factor (Kd) being defined as:

$$Kd = \sum_{i=1}^n \left[\left(\sum_{j=1}^{i-1} x_j \right) \cdot (v_{1,i-1} - v_{1,i})^2 + x_i \cdot (\lambda_i - v_{1,i})^2 \right] / v_{1,i}^2$$

in which:

$$\lambda_i = \text{MAX}(\mu_i, 1500 \text{ MPa})$$

λ_i has the value of μ_i , the upper limit of which is fixed at 1500 MPa

and in which:

$$v_{p,q} = \left(\sum_{i=p}^q x_i \cdot \lambda_i \right) / \left(\sum_{i=p}^q x_i \right)$$

38. (previously presented) The tube according to claim 37, wherein the flexural modulus is in the range of from 500 MPa to 120 MPa.

39. (previously presented) The tube as in claim 37, wherein the first polymer is a copolymer of propylene and ethylene.

40. (previously presented) The tube as in claim 37, wherein the first polymer is a heterophase polypropylene copolymer of propylene and ethylene.

41. (previously presented) The tube as in claim 37, wherein the most rigid polymer has a flexural modulus of no more than 850 MPa, with the result that the mixture forming the tube wall has a strong water barrier.

42. (previously presented) The tube as in claim 37, wherein the first polymer has a flexural modulus of no more than 500 MPa.

43. (previously presented) The tube as in claim 37, wherein the mixture comprises at least one second polymer.

44. (previously presented) The tube as in claim 43, wherein the at least one second polymer has a flexural modulus greater than 70 MPa, and in that the second polymer is contained in the mixture to a proportion of 15% to 85%.

45. (currently amended) The tube as in claim 44, wherein the at least one second polymer ~~has a flexural modulus between 25% and 75%~~ is contained in the mixture to a proportion in the range of 25 to 75%.

46. (previously presented) The tube as in claim 43, wherein the at least one second polymer has a flexural modulus of less than 70 MPa, and is contained in the mixture to a proportion of less than 50%.

47. (previously presented) The tube as in claim 46, wherein the at least one second polymer is contained in the mixture in a proportion between 15% and 40%.

48. (previously presented) The tube as in claim 43, wherein the at least one second polymer is a linear C₄-C₁₀ copolymer of

ethylene-olefin, having a melt flow index (MFI) measured according to standard ISO 1133 of between 3g/10mn and 15g/10mn.

49. (previously presented) The tube as in claim 48, wherein the melt flow index is between 4g/10mn and 12g/10mn.

50. (previously presented) The tube as in claim 43, wherein the at least one second polymer is a copolymer of ethylene-octene.

51. (previously presented) The tube as in claim 43, wherein the at least one second polymer is a polypropylene.

52. (previously presented) The tube as in claim 43, wherein the at least one second polymer is a heterophase copolymer of propylene and ethylene.

53. (previously presented) The tube as in claim 37, wherein the first, and optionally the single, polymer has a flexural modulus of less than 250 MPa for a tube capacity of at least 30 ml.

54. (previously presented) The tube as in claim 37, wherein any polymer of the polypropylene family entering into the wall composition mixture has a melt flow index (MFI) measured according to standard ISO 1133 of no more than 100g/10mn.

55. (previously presented) The tube as in claim 54, wherein the melt flow index is no more than 20g/10mn.

56. (previously presented) The tube as in claim 37, wherein the length is between 40 and 85 mm.

57. (previously presented) The tube as in claim 37, wherein the length is between 85 and 200 mm.

58. (previously presented) The tube as in claim 37, wherein the tube is obtained by injection into an injection mould comprising a core and an impression with the core itself comprising a central part of which one free end center bears upon the impression at least during an injection phase of the tube skirt.

59. (previously presented) The tube as in claim 58, wherein the free end of the central part of the core comprises supply channels at an injection end which has an apex wall formed at least in part of sectors corresponding to the supply channels.

60. (previously presented) The tube as in claim 59, wherein accumulated widths of the sectors in zones where they join with a face parallel to the axial direction of the at least one evacuation orifice represent at least 15% of the perimeter of the face.

61. (previously presented) The tube as in claim 60, wherein the accumulated widths represent more than 25% of the perimeter of the face.

62. (previously presented) The tube as in claim 60, wherein the sectors have a width which increases from an injection point of the mould along a centrifugal radial direction as far as the joining points of the sectors with the face of the at least one evacuation orifice.

63. (previously presented) The tube as in claim 59, wherein the wall of the at least one evacuation orifice has an annular throttle zone located beyond the sectors.

64. (previously presented) The tube as in claim 58, wherein the wall of the at least one evacuation orifice is extended by a ring of material positioned in a plane perpendicular to the axial direction under the end of the neck.

65. (previously presented) The tube as in claim 58, wherein the central part of the core of the injection mould is mobile, and wherein an apex wall of the tube end is formed with no gaps by drawing backwardly the mobile central part over a distance corresponding to a desired thickness of the apex wall.

66. (currently amended) The tube as in claim 65, wherein the free end of the central part of the core is in the shape of a sunken cone, and the angle $\angle \gamma$ formed by the bearing surface of the free end on the impression with a plane perpendicular to a longitudinal axis of the tube lies between 15° and 45°.

67. (currently amended)) The tube as in claim 66, wherein the angle $\angle \gamma$ lies between 15° and 20°.

68. (currently amended) The tube as in claim 58, wherein the free end of the central part of the core is in the shape of a projecting cone frustum, and the angle $\angle \beta$ formed by a bearing surface of the projecting cone frustum of the free end on the impression with a plane perpendicular to a longitudinal axis of the tube lies between 35° and 45°.

69. (currently amended) The tube as in claim 68, wherein the free end of the central part of the core is in the shape of a sunken cone in its part internal to the projecting cone frustum, and an angle δ formed by the bearing surface of the sunken cone of the free end on the impression with the plane perpendicular to the longitudinal axis of the tube being less than 45° .

70. (previously presented) The tube as in claim 69, wherein the angle δ is between 15° and 20° .

71. (previously presented) The tube as in claim 58, wherein the head comprises a single-piece securing means of a nozzle and a single-piece reducer, wherein the nozzle and the reducer are positioned in a continuation of the at least one evacuation orifice along the axial direction, wherein the apex wall of the nozzle forms the reducer, wherein the reducer orifice is obtained by cutting after injection-forming the tube, and wherein the tube, nozzle and reducer thereby form a single-piece assembly formed by injection in a single operation.

72. (previously presented) The tube as in claim 71, wherein the tube is provided with capping means provided with a tip of conical shape, the tip enters into the orifice of the single-piece reducer, and the tip places the wall of the reducer under centrifugal radial tension in the vicinity of the opening orifice.

73. (previously presented) The tube as in claim 58, wherein the head comprises a single-piece securing means of nozzle type positioned in a continuation of the at least one evacuation orifice along the axial direction, and wherein the tube and the

securing means form a single-piece assembly formed by injection in a single operation.

74. (previously presented) The tube as in claim 73, wherein the wall of the single-piece nozzle carries an asymmetric thread.

75. (previously presented) The tube as in claim 71, wherein the wall of the single-piece nozzle carries an asymmetric thread.

76. (previously presented) The tube as in claim 37, further comprising an added accessory of dispensing type of added reducer type or added nozzle tip type, or securing means of added nozzle type forming a reducer or nozzle tip, or capping means of service cap type, and the added accessory being positioned in a continuation of the at least one evacuation orifice along the axial direction.

77. (previously presented) The tube as in claim 76, wherein the added accessory is provided with a chimney of which an outer face is conjugated with a face parallel to the axial direction of the at least one evacuation orifice after inserting the chimney inside the orifice.

78. (previously presented) The tube as in claim 77, wherein the chimney of the added accessory places the wall of the at least one evacuation orifice under centrifugal radial tension.

79. (previously presented) The tube as in claim 77, wherein the added accessory is non-removable and the chimney of the added accessory is fitted with a penetration device of conical shape, the outer face of the chimney being radially recessed with respect to the penetration device.

80. (previously presented) A method for fabricating a flexible tube consisting of a skirt and head comprising at least one evacuation orifice and a neck forming a radial extension of the at least one evacuation orifice and being joined to the skirt, at least the skirt and the neck forming a single-piece assembly resistant to stress-cracking and forming a water barrier, the method comprising the steps of:

using as constituent material of a wall of the tube a mixture of a number "n", where n is at least equal to 1, of polymers belonging to the family of copolymers-olefins prepared from C₂ to C₁₀ monomers, at least one polymer belonging to the polypropylene family, the constituent mixture of the wall having a flexural modulus of between 700 and 80 MPa according to standard NF EN ISO 178; and

fabricating the skirt and head of the tube by injecting the mixture, in a single injection operation, into an injection mould comprising an impression and a core comprising a central part of which one free upper end center bears upon the impression at least during the skirt injection phase.

81. (previously presented) The method as in claim 80, wherein the using step comprises using a constituent mixture having a flexural modulus of between 500 and 120 MPa according to said standard.

82. (new) The tube according to claim 37, wherein the mixture has a dispersion factor (Kd) of the flexural modulus values of no more than 2, whether or not the mixture contains a polyethylene.